



Denver Water

Standard Operating Procedure

Item : Valve Inspections

Subject : 12" and smaller

Date : November 11, 1999

Revision Date:

Purpose

- A. To establish guidelines for the inspection and operation of 12 " and smaller valves in the Denver Water distribution system. Also to establish safety procedures which will provide adequate protection for workers and the public.

Policy

- A. It shall be the policy of Denver Water to conduct routine and systematic inspection of all valves in the water distribution system once every two years.
- B. It shall be the policy of Denver Water to maintain correct positioning of all valves, to assure the quality of water delivered to the customer.
- C. It shall be the policy of Denver Water that any necessary repairs are completed in a timely manner.

Equipment

- A. A vehicle equipped with overhead warning lights and traffic safety equipment is essential to provide protection in traffic lanes for workers and to clearly delineate the presence of an unusual situation for drivers and pedestrians.
- B. A field map of the existing water distribution piping is required to assist workers in determining the correct valve at a given location.
- C. Workers must be provided with personal safety equipment i.e. hard hat, traffic safety vest, toe protection.
- D. Tools required include a valve box and/or manhole opening tool, tools for cleaning debris from valve boxes, a valve operating key and a leak listening device such as a sonophone.
- E. Dark blue water-proof spray paint will be required to mark valve box lids.
 - 1. This will clearly show which valves have been inspected and;
 - 2. assist in locating valves in emergency situations.

Procedure

- A. Using maps and records from previous inspections, locate the correct valve in a given location. Items concerning the target valve that must be known before operating the valve are;
 - 1. What size is this valve?

- a. The size can be determined by the number of turns it takes to operate from fully open to fully closed.
 - b. The formula is as follows ; 3 times the diameter plus 3 equals total full turns. Of course this must be doubled for half turns.
2. What size is the main?
3. What direction is the valve operated?
 - a. In the Denver Water distribution system a standard valve is referred to as a Left Hand Valve (LHV). This is a valve that is turned from left to right in order to close the valve. Many districts do not utilize LHVs. Therefore it is imperative that the inspector know which way the valve operates. As one would reason if the valve is not a LHV it must be a Right Hand valve (RHV).
- B. Align vehicle in the street so as to cause minimal traffic interruption.
- C. Utilize all traffic safety equipment.
 1. Warning lights
 2. Traffic cones
 3. Flags
 4. Flagperson if determined necessary
- D. Remove valve box lid.
- E. Visually inspect the box for proper alignment, obstructions or packing leak.
- F. Clean obstructions from box.
- G. Use the valve key to determine whether valve is open or closed.
 1. Having already determined which direction the valve operates, try turning the valve both directions.
 - a. The valve will present a stop at both full open or full closed position. Leave the valve fully open if it is normally an open valve. Leave the valve fully closed if it is a normally closed valve.
- H. Utilize a listening device to determine if there is a leak noise on the valve.
 1. If the valve is closed, a leak may be heard if water is passing by the valve seats and gates.
 - a. This noise can be from water going over the gates, in which case the valve needs to be brought open slightly until leak noise stops.
 - b. A noise can be heard when water is going under the gates, in which case the valve is not fully closed.
 1. It may be necessary to operate the valve up and down several times to obtain a good closure.
 - c. This noise may be caused by a packing leak.
 1. Packing leaks can often be stopped by operating the valve slightly to reposition the valve stem and packing.
 2. If the packing leak persists repairs should be completed in a timely manner.
- I. Remove debris from valve box lid and paint with dark blue paint on the outside surface of the lid. This will make locating valves much easier in the future.
- J. Move vehicle from the traffic lanes to a location where the worker can

safely record all the information determined by the current inspection.

K. Record the following information for future use:

1. Location of valve, for example, east property line (EPL)
2. Size of valve
3. Size of main
4. Direction of operation
5. Date of inspection.N
6. Name of inspector
7. Needed repairs
 - a. Previous inspections may be incorrect
 - b. Information on maps may be incorrect